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EARLY DIAGNOSIS AND MANAGEMENT OF GYNECOLOGIC CANCER*

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This paper will be confined to the early symptoms, the early findings, the early diagnosis, prophylaxis, and treatment of malignancy in the female pelvis. Carcinoma of the cervix, the fundus uteri and ovary are the most frequently encountered types. Time will not permit us to discuss these but briefly.

CARCINOMA OF THE CERVIX

Cervical malignancy is by far the most common pelvic cancer, and as you well know, ranks extremely high as a cause of death. Cancer of the cervix is so insidious in onset that there are no early symptoms. It is indeed most unfortunate that our medical brethren do not seem to realize that. The earliest cases I have seen have had no symptoms save for one case that recalled on re-examination of her record one short episode of post-coital spotting. When a patient has slight vaginal spotting she usually demonstrates well advanced malignancy.

What are the early findings, then, in a cervical carcinoma before it gives rise to symptoms? In those we have seen, the earliest cancer looks exactly like chronic cervicitis, so minimal that one would feel a cautery was hardly necessary, the lesion being so insignificant. These early malignancies were noted on routine examination because they bled easily when lightly traumatized with a cotton pledget. Not all lesions that bleed on brushing them with a speculum blade or probe will be malignant; in fact very few will demonstrate cancer cells. The benign or malignant cervix cannot be differentiated grossly. The diagnosis can be made early only by the free use of the biopsy. In every cervix,

where we are able to demonstrate the slightest sanguinous ooze, we take a biopsy of the area where the blood comes forth. We have thus been able to diagnose cancer early.

That we take a great many biopsies will not be argued, nor will we claim many early lesions. Had we found but one cancer all this minor surgery would have been worthwhile. There is no record of the number of biopsies that we have done but the yield in four years has been five early carcinomas. Two of these lesions were so small that they covered only two low-powered fields under the microscope. That these patients are well and healthy today with no chance of a recurrence has more than paid us in satisfaction.

Since we have pointed out such innocent beginning for this dread cancer one naturally thinks of prophylaxis. What is the cause? Just what systemic condition suddenly gives cells the impetus to become anaplastic is not known. However, it is significant to us that four of the five early cancers seen were in the midst of chronic cervicitis. We make no claim that this innocent condition can contribute locally to the development of cancer, but it would seem wise and has long been advocated to keep all cervixes clean.

Prophylaxis for cancer of the cervix begins at any age the individual doctor might select up to thirty years of age. At that age all women should be on a program as advised by Dr. Catherine McFarland. A program must have a beginning. In our work, both private and clinic, we start with a patient in her twenties or after she has delivered a baby. Nearly all our patients today return to us after delivery for a follow-up examination. At that time it is our duty to see that the cervix is healed. Cauterization should be employed for the usual chronic cervicitis. Long periods of painting with silver nitrate or some other caustic, with or without tamponage, is of questionable value. Once the patient is completely

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well and her cervix healed, she should be instructed about cancer prophylaxis. In our hospital and private office the same routine is followed, i. e., all are given six months' appointments. In my private practice, I send a card reminding the patient of her appointment. Women today are more than anxious to come for semi-annual check-up examinations. In fact, it is easier to "sell" the idea to women than to the average doctor. The medical profession has lagged far behind the dental profession in this regard, since it is now a household phrase to "see your dentist twice a year." I agree with this catch phrase and encourage my patients to go to their dentist semi-annually, but I'm quite certain that 30,000 to 35,000 women in this country do not die from neglect of oral hygiene, as they do with pelvic neglect. With every doctor a missionary in this regard, seeing his patients and examining them completely every six months the cancer problem would settle down to compare with tuberculosis today.

The treatment of carcinoma of the cervix today is in the midst of a change. Surgery, long ago forgotten in the treatment, is at the moment being reconsidered and re-evaluated, notably by Meigs. We have employed radical surgery in all our early cases with good results thus far. We have not done the radical Taussig operation as further improved by Meigs, but we hope to in the near future. In our average Stage I growths we use 2500r of preliminary deep therapy followed by 6,600 mgh. of radium to the cavity of the uterus, the portio vaginalis, and the parametrial regions.

CARCINOMA OF THE FUNDUS UTERI

The early symptoms of cancer here are quite different from the cervical growth. We have symptoms early in the average case, long before the cancer has penetrated deeply or spread to adjacent structures. About 90% of these patients will complain of a watery, mal-odorous discharge followed in a few weeks or months by intermittent to steady bleeding.

The diagnosis is suggested always by these two findings and particularly in the post menopausal patient. The diagnosis is made only with a thorough curettage. To carry out this procedure adequately hospitalization and anesthesia are necessary, if one is to "scrape"

the entire canal thoroughly. Along with curettage, accurate sounding of the uterus to determine size, thorough bimanual palpation, all add information in the evaluation of a given case. We do not favor the introduction of radium at the time of curettage, since a complete diagnosis is not made until the pathologist's report is in. An attempt is made at the time of this aforementioned examination to classify carcinoma of the fundus on the basis of tissue involved, according to the classification of the American College of Surgeons. Early in this work we followed Miller's classification, where size of the uterus is the major yardstick in grouping cases. Following Miller's rule for Group I cases, we have found lesions that were freely movable, a uterine cavity of 3 inches in depth and metastases to the ovary, uterosacral ligament and bowel.

Carcinoma of the endometrium or body of the uterus is best treated by preliminary xray, panhysterectomy and bilateral salpingo-oophorectomy. In all but the very earliest cases, we favor preliminary xray therapy for the following reasons:

1. Infection is reduced, making surgery safer.
2. Xray reduces the size of the uterus by producing regression of intra and extrauterine carcinoma, making both more amenable to surgical excision.
3. Xray effects a larger field than preliminary intracavitary radium.

We have five cases treated entirely by xray and radium because of medical complications or advanced disease. One of this group presented a double primary when first seen. A radical mastectomy was done for scirrhous carcinoma of the breast and the axillary nodes were positive for cancer. We thought it unwise to subject the patient to further radical surgery in the face of her far advanced breast malignancy. Today she is free of evident breast disease but has vaginal metastases from the uterine carcinoma. In the future, we shall treat each malignancy as it should be treated and not try to decide which primary will be lethal.

As regards prophylaxis of carcinoma of the fundus, it is evident that all women taking part in a program of semi-annual check-up

examinations will have a relatively early diagnostic curettage done and early treatment.

CARCINOMA OF THE OVARY

Carcinoma of the ovary is a completely silent disease in its early stages. In fact, the rule is for a menstruating woman to come in thinking she might be pregnant when she has a far advanced neoplasm. There are no symptoms until very late. The only way one could possibly make an early diagnosis is by the routine check-up method.

The treatment of carcinoma of the ovary has been disappointing and we have made several mistakes. Early in our series we encountered far advanced cases that were considered inoperable. Exploratory laparotomy with biopsy was done and we found multiple metastases about the liver, omentum, peritoneum, etc., and deep xray was used and found to be lacking. Several such cases, demonstrated that xray did not stop the growth in the least.

We began next to excise all primary ovarian growths whenever possible, removing the ovaries and uterus. In several cases we have been surprised to find the implants regress and disappear. We are of the firm opinion that an ovarian carcinoma should not be labeled inoperable because of extension or abdominal carcinomatosis, but should always have a radical operation. Surgical removal of the primary lesion seems to have a more beneficial effect than xray castration.

Because of removing the primary ovarian cancer in cases formerly called inoperable we now have eight patients living with no trace of widespread cancer.

CONCLUSIONS

1. Early discovery of cervical malignancy by semi-annual prophylactic examinations and the free use of the biopsy, will make the possibilities of salvage much higher, though the problems of management of the minimal lesion in young women may be multiplied.

2. A certain number of minimal lesions at the moment seem to us to be more amenable to cure by surgery than by radiotherapy.

3. All but the early cases of fundal carcinoma are found to benefit by a preliminary course of xray therapy, and are thus made more amenable to cure by surgery.

4. All cases of carcinoma of the ovary

should be subjected to abdominal exploration and biopsy, the ovaries and uterus removed if possible.

5. All women should be on a program of semi-annual prophylactic examinations, to insure early diagnosis and treatment of pelvic malignancy.

DISCUSSION

DR. IRA BURNS (Wilmington): In the Wilmington General Hospital we have a fair amount of radium and platinum filters, and we think our application of radium is very effective, generally using 125 mgm. with platinum filters. However, it is unfortunate that many cases are advanced carcinoma of the cervix and these cases certainly should have something done to relieve them, temporarily at least. It is difficult for surgeons to understand that pre-operative irradiation should be done but at any rate we think radium plus high voltage xray gives improvement.

DR. JOHN F. HYNES (Wilmington): I enjoyed very much Dr. Beecham's very able presentation, particularly because he spoke of two or three things in which I am interested. I think one of the points to be remembered is the fact that carcinoma of the cervix may occur at a relatively early age. So often we think of carcinoma being a disease of the aged. A couple of years ago I reviewed a series of 140 patients over five years. Some 40 of them were not suitable for the analysis we had in mind, mostly recurrences, and many of them we did not treat at all. There were 100 on whom treatment was undertaken and of that group 10% were under 30 years. The youngest was 20. There were altogether 10 or 12 under 30 with carcinoma of the cervix; they had the usual symptoms of watery discharge and bleeding. I might say that my impression is that the younger the patient the more likely to survive. This is contrary to the case of carcinoma of the breast, where in the young patient the prognosis is very poor. The young patient will tolerate severe irradiation and I think also she is better able to heal after severe radiation instead of getting into the complications of slough and infection.

I agree with Dr. Beecham's emphasis on the importance of biopsy. I should like to make a further point that an adequate biopsy

can be made on any table in any office without anesthesia and does not require hospital admission. An exception to this is the carcinoma in the endocervix. It is possible to put punch forceps into the cervical canal but results are a little difficult.

I feel that silver nitrate application is very slow and ineffective. Cauterization is necessary and that also can very often be carried out in the office without anesthesia.

He spoke of the postmenstrual bleeding due to estrogens. Unfortunately we see every now and then a patient between 40 and 55 who gives a history of irregular vaginal bleeding perhaps more free than usual and more profuse than usual and thought to be going into the menopause, and is given estrogen without examination, and then sometime after this therapy has not proven successful she gets a vaginal examination. This is not only neglect of the patient but may actually be harmful, as the estrogen certainly stimulates the growth of the endometrium and possibly the growth of carcinoma of the cervix or other gynecological cancer.

Apropos the surgical treatment of carcinoma of the cervix. I read Meigs' article. However, the impression I received from this article was that his results were not convincing to me as being sufficient evidence to change the method now commonly used. He was unable to give final results at this time, but the surgical treatment of carcinoma of the cervix is limited to early lesions and cannot be used or is not recommended for advanced lesions. The radium results are those obtained on all cases, stages 1, 2 and 3 and 4 of anybody who reports carcinoma. To break down results in early carcinoma makes them very much better. A series from the Philadelphia General Hospital with rather advanced carcinoma show poorer results. Under proper conditions the results of radium therapy will vary with the degree of the disease when the patient comes in for treatment. In our own experience some 45% of about 40 patients survived 5 years. Some of course will die of cancer but not very many of them.

DR. BEECHAM: I thank you for your discussion. We are thoroughly sold on pre-operative irradiation. Post-operative irradiation we think useless. For instance, we take out

a carcinoma of the ovary and we leave an implantation of cells, etc. What is there to irradiate? We have no target. When there is a recurrence there is a target.

Relative to age, it is a mistake to believe that carcinoma is a cancer of the aged. We now have a patient under treatment for carcinoma. She was hospitalized for an abortion and early carcinoma was found involving one-fourth of the cervix, clinically stage I. Fortunately she aborted and brought the cancer to our attention. We have one sarcoma of cervix at age 25.

Biopsy in the office is a perfectly simple operation. As for menopausal bleeding, I always tell students never to consider bleeding as a symptom of the menopause. It is very true that women have menopausal bleeding but you can't tell.

As to Meigs' work I heard his last paper last week. Meigs is not afraid of surgery. He is trying to find out its value for himself. One thing he did say was that it takes an expert technician to make a diagnosis of carcinoma.

INFUSIONS THROUGH THE BONE MARROW*

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The use of the bone marrow space for the infusion of fluids when the veins are not accessible should be a routine procedure in every hospital. The technique is very easy to master and the equipment necessary to carry out this simple operation is not expensive and may be readily obtained. Many lives can be saved when the needed medicaments can be introduced into the circulation immediately when the emergency arises. This is not only true in cases of shock and hemorrhage in adults but also in infants in whom the veins are not available or in cases where other parenteral routes would not be advisable or practical. Before the intramedullary method for infants was described and popularized by Tocantins and others* we were in the habit of cutting down on a vein in the arm or ankle, using the longitudinal sinus thru the anterior fontanel, the intraperitoneal route, the external jugular vein, or under the skin. In certain

* Read before the Medical Society of Delaware, Lewes, September 12, 1944.

cases, however, even these routes were far too dangerous to employ routinely.

In addition to fluids it often becomes necessary to inject drugs, anti-sera and antitoxins into the circulation of adults and infants. Thus far the following drugs and preparations

end of the sternum are the preferred sites. In children over six years of age the manubrium is used, while the upper end of the tibia or the lower end of the femur are more suitable for children under this age. The latter sites may also be used in older chil-



Figure 1.—Set-up for giving blood and saline in tibia by the drip method to infant age six months (Case 11).

have been infused thru the bone marrow: insulin, stimulants, sulfa solutions, penicillin, mercupurin, heparin, diotrast, sodium pentothal, 5%, amino acids, pectin, pneumococci and influenza antiserum, diphtheria and anti-meningococci antitoxins. The fluids thus far reported used are citrated whole or diluted blood, plasma, saline Hartmann's solution, and 5, 10, 20 and 25 per cent glucose.

In adults, the manubrium and the upper

dren if one is less experienced and hesitates to use the intrasternal route.

Two methods of infusing fluids may be used. One is the usual gravity drip method. (Figure 1). This is very conveniently used in adults or in cases where large amounts of fluids have to be given over a long period of time. The other method is employing a syringe for the direct injection into the bone marrow. This method is advisable when

amounts up to 100 c. c. are to be given. This also overcomes back pressure of the veins and the bone marrow caused by crying infants. It must be kept in mind that when the syringe is used, fluids must not be given over 4 c. c. per minute in order to avoid injury to the bone marrow veins. (Figure 2).

The length of time for an infusion to go through the bone marrow by the gravity method depends on the age of the individual

hours or several days through the same needle, if the condition of the patient permits. The nurse can be instructed in removing the stylet and starting the infusion at the required intervals. This makes it unnecessary for a doctor to be present to reinsert the needle. The frequent injections of fluids at close intervals answers a very important need in infants with gastroenteritis or in adults with poor veins who require large amounts of

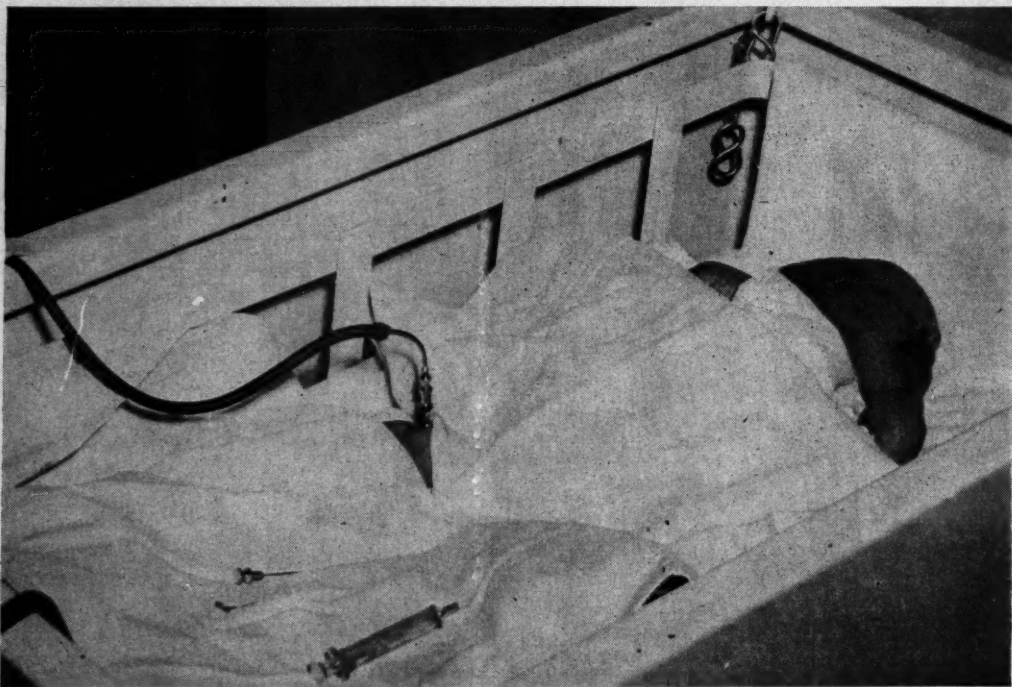


Figure 2.—Infant 21 days weighing $4\frac{3}{4}$ pounds receiving blood and glucose thru the lower femur. Fluids were given at intervals of four hours thru the same needle (Case 9).

and the solution used. Blood, being more viscous, runs in more slowly and it often becomes necessary to stir the blood flask in order to avoid the settling of the red blood cells. Running some saline through the tube dilutes the blood and hastens the infusion, or one may need to rinse the needle with the injection of small amount of saline to clear it of any obstruction. The rate of flow varies from $\frac{1}{2}$ to 6 c. c. per minute, depending on the viscosity of the solution and the successful position of the needle.

Since the flow of solutions is usually slow, one may give fluids continuously over many

parenteral fluids or medications. Doud and Tysell⁹ reported a case in which the sternal needle was left in place for four days and was reinserted a day later and left in for another five days without any untoward effects. This patient was given 22,975 c. c. of fluids during this time.

The following technique is usually recommended. The set-up is prepared before the puncture is made. The chosen site is sterilized, anesthetized and draped as would be done for a spinal tap. When the manubrium or sternum is chosen the needle is inserted in the midline vertically. Slight pressure with

a rotary motion is then required to penetrate into the bone marrow space. At this stage, the needle is tilted to a 30 to 45 degree angle

with the skin with the point directed toward the neck. The stylet is then removed and a small amount of bone marrow is aspirated to

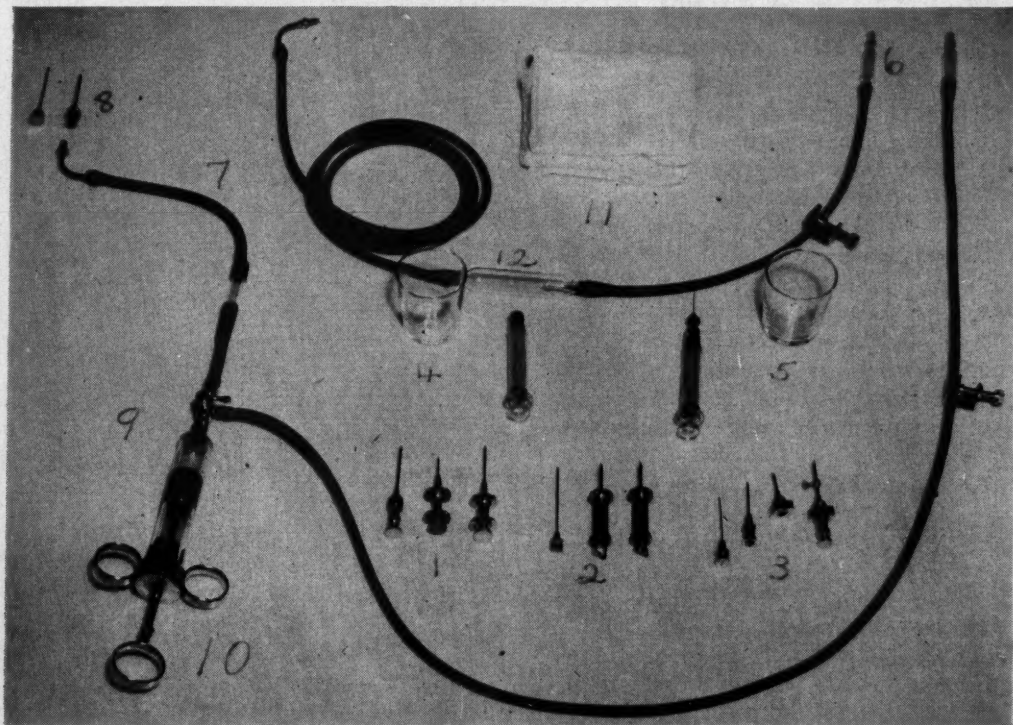


Figure 3.—Necessary equipment for giving intramedullary infusions. Needles described by (1) B. D., (2) Jones, and (3) Tocantins. (4) syringe and glass for sterile salt solution. (5) syringe and glass for 1% procaine. (6) glass tip inserted in the fluid bottle. (7) metal adapter inserted in the needle. (8) Three-way stop cock (9) used in the syringe method. (10) metal plunger Luer-lock 10 c.c. syringe is preferred, since the metal plunger does not stick when used several times, and the Luer-lock prevents slipping of the syringe, when a little pressure is used. (11) sterile drapes for field of operation.

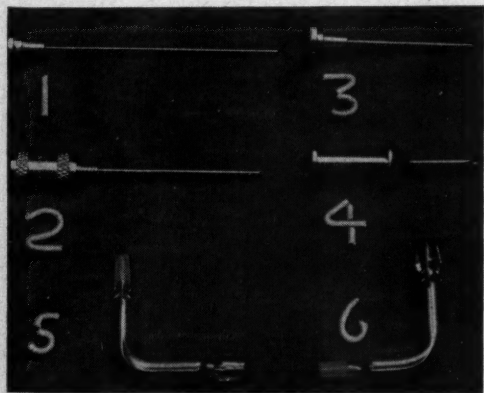


Figure 4.—Turkel set. (1) stylet and (2) inner trephine needle. (Note sawlike cutting edge). 17 gauge; Stylet (3) and outer splitting needle (4), 14 gauge, 20 mm long; two right angle glass (5, 6) observation tube adapters.

confirm the correct location of the needle. The adapter is then connected to the needle and the infusion proceeds. In the tibia the needle is inserted in the midline of the flat surface about one inch below the patella. When the femur is used the insertion is made on the anterior surface of the lower third of the bone. In both instances, the needle is pointed away from the joint in order to avoid injuring the joint structures. The leg is carefully immobilized so that nursing care may be given and the patient moved in bed without any danger of the needle becoming dislodged.

There is no danger of complications developing with this method if careful aseptic technique is employed. The possibility of infection and fat embolism should not deter one

from using this method. We have numerous examples of bone fractures where these complications do not occur in spite of the frequent use of "ice tongs," pins, screws, plates, etc.

The following precautions are to be emphasized:

1. Use aseptic technique as in doing a spinal tap.
2. Have the infusion fluid ready before the puncture is made.
3. In restraining infants, avoid any constriction above the point of injection to prevent back pressure.
4. Use the tibia or the femur in infants and children under six years of age.
5. Exercise extreme care when using the body of the sternum because the space here is not as large as in the manubrium.
6. Be sure that bone marrow is aspirated before forcing fluid in the cavity.
7. When the syringe method is used, fluids should not be given over 4 c. c. per minute.
8. Irrigate the needle with sterile salt solution if the flow is running slowly or has stopped.

Figure 3 shows needles described by Tocantins (3), Jones (2), and the B. D. needles (1). Figure 4 shows the Turkel set, which consists of one outer splitting needle and stylet, 14 gauge, 20 mm. long (3 and 4); one inner trephine needle and stylet, 17 gauge (1 and 2); and two right angle glass observation tube adapters. The purpose of the trephine needle is to make it possible to obtain bone marrow specimens for biopsy and at the same time to drill a hole through the bone, thus avoiding the possibility of obstruction of the needle by broken particles of bone that may be loosened by the regular needle when used alone.

In our small series of fourteen cases, we injected 7,645 c. c. of fluids, of which 3,075 c. c. was citrated blood. Four of the infusions were in the manubrium, five in the upper tibia, and six in the lower femur. There is a certain group of patients in whom the bone marrow space is either fibrotic or not developed, or it is so packed with cellular elements that the fluid will not run through. This ob-

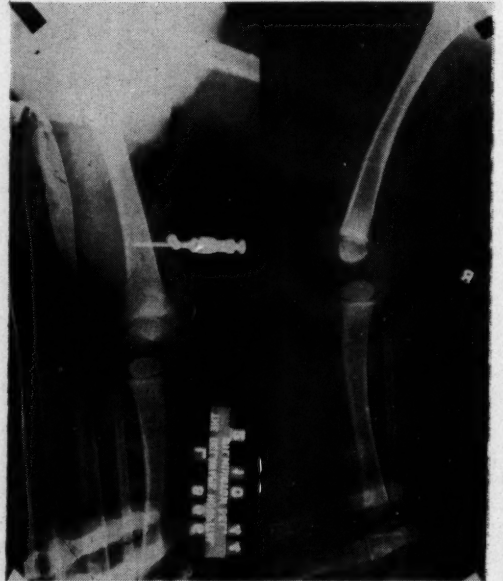


Figure 5.—Roentgenograms of anterior and lateral views of (case 12) child 14 months showing needle in the bone marrow space. Note puncture areas in other bones.

servation has been made before by others.²⁰ We experienced this difficulty in two cases (7 and 12), the first one being a case of lymphatic leukemia (Fig. 5) in which thick bone marrow was easily aspirated and 50 c. c. of

5% glucose was given by the drip method in one hour. Other attempts were made on the tibias and femurs (see puncture marks on bones in Figure 5) without any success. We did not try to force the fluid through a syringe as described by Tocantins.¹⁶ The other case was one of erythroblastosis in an infant 5 days old in whom we failed to enter the bone marrow space. We also noted that in one case of hemorrhagic purpura (case 4) the flow of the solution was much slower than usual. It

will be noted that the same needle which was kept in situ for 48 and 60 hours in two instances, was used in giving several transfusions.

SUMMARY

1. Intramedullary sets should be a part of the necessary hospital equipment and should be on hand at all times for emergency use.

2. The more frequent use of this method of parenteral fluid administration is advocated.

TABLE I—PATIENTS INFUSED

Case	Age	Sex	Clin. Diag. Result	Fluid	Amt. c. c.	Time	Site of Injection
1. J. B.	12 days	M	Pylorospasm Recovered	Blood	50	1 hr. 50 min.	Rt. Femur
2. F. M.	10 mos.	M	Gastro-enteritis Recovered	5% Glucose	500	3 hrs.	Rt. Femur
				5% Glucose	500	3 hrs.	(Same)
				5% Glucose	500	2 hrs.	Needle)
3. J. H.	3 yrs.	M	Gastro-enteritis Recovered	Blood	250		
				Saline	100	4½ hrs.	Lt. Tibia
				5% Glucose	500	6 hrs.	Rt. Tibia
4. S. B.	5 yrs.	F	Hemorrhagic Purpura. Splenectomy. Recovered	Blood	150	8 hrs.	Lt. Tibia
				Blood	110		(Same)
				Saline	75	12 hrs.	Needle)
5. R. S.	9 yrs.	F	Post T & A Hemorrhage Recovered	Blood	300		
				Saline	200	2 hrs. 52 min.	Manu-brium.
6. S. M.	14	F	Hemorrhagic Purpura. Splenectomy. Recovered	Blood	500		Manu-
				Saline	200	5½ hrs.	brium
7. B. D.	6 days (5 lbs.)	F	Erythroblastosis Expired	Unable to get into the bone marrow of either extremity			
8. B. L.	20 days (4 lbs)	M	Gastro-enteritis Expired	Blood	30		
				5% Glucose	50	5 hrs.	Rt. Femur
9. B. L.	21 days (4¾ lbs)	M	Gastro-enteritis Expired	Blood	30		
				Glucose	20	2½ hrs.	Rt. Femur
				Blood	30	1¼ hrs.	
				Glucose	30	25 min.	
				Glucose	30	50 min.	(Same)
				5% Glucose	30	1 hr.	Needle)
				Blood	20		
				5% Glucose	15	3 hrs.	
10. B. B.	5 weeks	F	Bronco-pneumonia Tympanitis Expired	5% Glucose	250	65 min.	Lt. Femur
				Blood	125	1 hr.	(Same)
				5% Glucose	50	30 min.	Needle)
11. S. R.	6 mos.	F	Tracheobronchitis Tracheotomy Expired	Blood	100	2 hrs.	Lt. Tibia
				Saline	100	1¾ hrs.	
				Blood	100	3 hrs.	Rt. Tibia
				Saline	100	1½ hrs.	
12. G. S.	14 mos.	F	Lymphatic Leukemia Expired	5% Glucose	50	1 hr.	Rt. Femur
				Failed in further attempts to use other femur and tibias. Were able to withdraw bone marrow once but only 50 c. c. of fluid could be given. (See x-rays).			
13. E. D.	3 yrs.	M	Second degree burns. All extremities and back. Expired.	Plasma	100	2 hrs.	Manu-brium
				Infusion stopped because of apparent dyspnea and fear of needle penetrating the posterior plate.			
14. J. T.	45	F	Hypernephroma. Anemia. Expired 6 mos. later	Blood	400		
				Saline	500	5 hrs.	Manu-brium

3. The routine use of bone marrow smears and biopsy in the diagnosis of anemias, blood dyscrasias, and of the various fevers, should stimulate clinicians and hospital residents in becoming adept in the art of bone marrow puncture. It requires little skill for one to perform this simple operation if the proper equipment is at hand and the necessary precautions are taken.

NEEDLES

Tocantins Needles—George Pilling & Son Co., Philadelphia, Pa.

Jones Needle—American Hospital Supply Corp., 1086 Merchandise Mart, Chicago, Illinois.

B. D. Sternal Needles—Becton, Dickinson & Co., Inc., Rutherford, N. J.

Turkel Needle—Trephe Instruments, Inc., 1302 Industrial Bank Bldg., Detroit, Michigan.

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1945 Annual Session of A.M.A. Is Cancelled

"The Board of Trustees of the American Medical Association, after consideration of all factors involved," *The Journal* of the Association says in its January 20 issue, "has officially announced the cancellation of the Ninety-Fifth Annual Session of the Association scheduled for Philadelphia June 18-22. This is the fourth time in the Association's history and the second time during the present war that an annual session has not been held. In 1861 the annual session was postponed for a year because of the outbreak of the war between the states. In 1862 it was again postponed for a year. The 1943 annual session scheduled to have been held in San Francisco was canceled. Last year the session was held in Chicago. It is expected that a meeting of the House of Delegates will probably be held in 1945 in Chicago at a time to be announced later in *The Journal*. The action this year is taken voluntarily in order to cooperate to the fullest possible extent with the request of the Office of Defense Transportation and in the interest of the nation's war effort."

Just 90 Years Ago

Framed in a drug store at Beverly are these "Drug Store Rules, 1854."

"Store will be opened promptly at 6 a. m. and remain open until 9 p. m. the year around. Store must not be opened on the Sabbath day unless absolutely necessary and then only for a few minutes.

"An employee who is in the habit of smoking Spanish cigars, getting shaved at a barber shop, going to dances and other places of amusement, will most surely give his employer reason to suspect his integrity and all-around honesty.

"Each employee must attend Sunday school every Sunday. Men employees are given one evening a week for courting purposes and two if they go to prayer meeting regularly. After fourteen hours of work in the store, the remaining leisure time must be spent in reading good literature."—Boston Globe (via *Bull. Del. Pharm. Soc.*, Dec. 1944).

CLINICAL CASES FROM THE HOSPITALS

CLINICO-PATHOLOGICAL DISCUSSION OF TWO INSTANCES OF SUDDEN DEATHS IN ALCOHOLICS*

O. J. POLLAK, M. D., Ph. D.,
Wilmington, Del.

Introduction and Conclusions

In this report the importance of medico-legal autopsies is stressed. Some of the causes of sudden death are discussed.

In one case intemperance predisposed to fulminant disease; in the other case alcoholism was directly responsible for sudden death.

CASE 1

History. A 65-year-old white man was brought to the hospital by ambulance from a bar room. He died within 15 minutes. He was known to indulge in alcohol for the past 20 years, since he had separated from his wife.

On admission, the patient's skin was cold and moist with perspiration, his blood pressure was 110/80, his pulse was normal, but his respiration was difficult. He was gasping for air but felt better when he set up. There were moist rales over both lungs. The patient complained of a sudden severe pain in the center of the epigastrium. The abdomen, however, was not rigid. In spite of administration of morphine sulphate, coramin, aminophyllin and oxygen the dyspnoea increased steadily. Five minutes prior to death the patient developed hemoptysis.

Clinical Discussion. The attending physician had the impression that the patient suffered a coronary occlusion. Sudden epigastric pain develops in many vascular disorders. In coronary sclerosis this pain is commonly paired with fear and with oppression over the chest. Huchard's angine de poitrine pseudogastralgique and Ortnier's dyspraxia intestinalis arteriosclerotica, which are due to sclerosis or occlusion of intestinal arteries, imitate short subdiaphragmatic angina with intermittent umbilical meteorism. Heart rupture or embolism of the splenic artery are often complicated by epigastric pain, but this would not represent the only symptom. Such pain is occasionally present in aneurysm of

the abdominal aorta or with arteritis nodosa. Another group of conditions causing sudden epigastric pain comprises gastromesenteric occlusion with acute gastric dilatation, high seated ileus, torsion of the omentum, rarely lead colic, splenic or tabic crises. Biliary colics are differentiated by their localization to the right of the midline and by their radiation toward the shoulder. Acute cholangitis, cholecystitis, subphrenic abscess and septicemia are characterized by the rise in temperature. True peritoneal epigastric symptoms may be caused by perforation of the stomach, the duodenum or even the appendix. Peritonitis-like pain, tenderness to pressure and collapse are caused by infections, bleeding and necroses of the pancreas. Pancreatic affections are accompanied by hyperglycemia and glycosuria, often by hardening of the head of the pancreas (Riedel's tumor). Pancreatic disease is often paired with cholelithiasis; acute pancreatic insufficiency often preceded by an upset stomach.

The symptoms encountered in the patient under discussion were neither typical for coronary occlusion nor were they characteristic of pancreatic disturbance. Praecordial pain radiating toward the left shoulder was absent, and on the other hand, the tonus of the abdominal muscles was normal. A blood amylase and blood sugar determination would have established the correct diagnosis. There was, however, no time for tests; the administration of stimulants was imperative.

Necropsy. The coroner ordered an autopsy. The outstanding findings were an acute cardiac dilatation (heart weight, 680 gms.), and an abundance of frothy bloody fluid in the voluminous lungs (combined weight, 1950 gms.). The pancreas appeared swollen, hardened, mottled red, with many deep red spots and larger areas. Its lobules were distinguishable and the duct appeared free in the body and tail. A round, hard, pinkish calculus, measuring 3 mm., was seated 0.5 cm. from the orifice, obstructing the main pancreatic duct. The gall bladder contained 22 pale yellow, faceted concretions, but all the bile ducts were free.

A frozen section of the pancreas confirmed the gross diagnosis. The pancreatic calculus was analyzed and proved to be composed of carbonates and phosphates. Blood taken from the left heart 19 hours after death con-

* From the Department of Pathology of the Wilmington General Hospital.

tained 115 mg. per cent of glucose. The time elapsed since death made any amylase determination useless.

Anatomical Diagnosis. Acute cardiac dilatation: severe pulmonary edema; acute hemorrhagic pancreatitis; cholelithiasis; history of chronic alcoholism.

Pathological Discussion. Activation of the pancreatic ferments due to obstruction of the pancreatic duct by a bile concrement or due to retrograde bile flow during infection of the duct is commonly held responsible for the acute hemorrhages and fatty necroses of the pancreas and the omentum. Cholelithiasis was present in the patient under discussion but the obstructing concrement was a true pancreatic calculus. It caused foudroyant damage which did not last long enough for necroses to develop. The pulmonary edema and subsequent acute cardiac dilatation were consistent with the extreme hyperglycemia caused by the complete destruction of the pancreatic islets. This condition may develop on the basis of chronic inflammation of the gland or without any previous impairment. Intemperance is believed to be predisposing to sudden hemorrhage.

CASE 2

History. A 26-year-old white man was found dead in his home in the early morning hours. His body was brought to the hospital. He was known for his drinking habits.

The inspection of the body did not reveal any signs of violence or any alteration which would allow reconstruction of a disease. The man was pronounced dead, but no cause of death could be given by the physician in charge.

Clinical Discussion. In this, as in similar instances, necropsy is imperative. Even with an autopsy the determination of the cause of death may be difficult. The inexperienced is inclined to blame death on the cessation of the function of the heart, the lungs, or the brain. While this is true in a broad sense there may be various reasons for the functional exhaustion of these organs. A person in diabetic, uremic, dyspeptic or alcoholic coma dies ultimately from the effect of toxins upon the central nervous system. It is, however, necessary to know the underlying disease if one wants to prevent the collapse. It may be of interest to the family of the

deceased to know whether death was caused by a disease of heredo-familial importance. Insurance companies are concerned with similar problems. Public health authorities are anxious to know of any contagious disease which may have caused sudden death, e. g., laryngeal diphtheria. It may well be pointed out that uremia or diabetes and other states do not always present definite pathologic findings. Necropsy of a diabetic person who has not been under medical observation may not reveal diabetes unless it is supplemented by laboratory examinations. One should not speak of cardiac death but rather of cardiovascular death, for all types of internal and external hemorrhages due to rupture of vessels or organs must be added to this group. Similarly, one should talk of respiratory death and add to the pulmonary causes the laryngeal obstructions and compressions. The way a person dies from acute hemorrhagic pancreatitis is known, and the mechanism of acute adrenal insufficiency is quite clear. Such instances in which death occurred after gastrointestinal perforation or due to compression of the carotid sinus or the splanchnic nerves are more difficult to explain. At any rate, the autopsy has to be performed with all possible causes of sudden death in mind.

Necropsy. The coroner ordered an autopsy. The outstanding findings were an extreme mottled appearance of the brain, especially of the mammillary bodies; a waxy red color of all muscles; multiple petechiae over both lungs; and a deep red discoloration of the digestive tract, with predominance in the colon, the lining of which was covered with yellowish pus.

The brain findings were suggestive of acute alcoholic intoxication. Estimations disclosed 0.49 per cent of the ethyl alcohol in the blood, 0.37 per cent in the brain substance, and 0.35 per cent in the liver tissues. The appearance of the muscles and the pleural petechiae were suggestive of a septic or toxic condition and were explained through the alteration of the intestines. A urine examination disclosed leukocytic casts and pus cells and thus acute kidney damage.

Anatomical Diagnosis. Toxemia, acute alcoholic intoxication; acute gastroenterocolitis; generalized congestion; pleural petechiae.

Pathological Discussion. A person who dies from acute alcoholic intoxication is mostly found dead after a night's spree or is observed to die suddenly after a few violent convulsions ("rum epilepsy"). Death is ultimately caused by a deep coma from acute damage of the brain cells. The amount of alcohol detected in the patient under discussion warrants the diagnosis made. The maximum blood alcohol concentration is reached two hours after drinking. The man's whereabouts during the night prior to his death were known. The large amount of undigested Chinese food in the stomach indicated that he died soon after he returned home from a night's debauch.

The acute purulent colitis and the extreme muscular congestion are not consistent with acute alcoholism. Two thoughts occur: Either the alcohol was consumed mixed with a poisonous substance affecting the intestines, or colitis due to an infectious agent was pre-existing. Because of the first possibility the laboratory findings were expressed broadly as "ethyl alcohol." In the case of a combination of colitis and alcoholism, the intoxication would greatly enhance the inflammation and allow bacterial poisons to pass the damaged vessels, affect the kidneys, muscles, and pleural capillaries. Smears and cultures from the intestinal content disclosed a strain of *Escherichia coli*. This grew in pure culture on a large series of various media. A suspension of the culture given by mouth to a guinea-pig failed to produce any symptoms in the experimental animal. The possibility of a virus infection of the intestinal tract must be taken into consideration. Which of the two suspicions is correct cannot be determined by the medical profession. An investigation of the deceased man's drinking places could reveal the truth. Still, a combination of intestinal disorder and consumption of "bad" liquor seems highly probable. About ten per cent of all unexpected deaths can be explained through acute alcoholic intoxication. Such was the case in this instance.

DELAWARE ACADEMY OF MEDICINE

The annual meeting of the Delaware Academy of Medicine was held at the Academy January 23, 1945. The reports showed a year of successful operations, despite the wartime

conditions and the absence of one-third of the members. The financial report showed a satisfactory condition.

This is the only meeting of the Academy of Medicine for the year 1945. Due to conditions, the usual scientific meetings for the profession and the public will be omitted.

The annual election resulted as follows:

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VITAMIN SUPPLEMENTS OF NO VALUE FOR NORMAL PERSONS

"Administration of vitamin supplements to a group of apparently normal persons, consuming the usual American diet, had no demonstrable beneficial effect," Julian M. Ruffin, M. D., and David Cayer, M. D., Durham, N. C., report in *The Journal of the American Medical Association* for November 25. The study was conducted at the Duke University School of Medicine at the request of the Office of the Quartermaster General, U. S. Army. Volunteer medical students and technicians were used as subjects.

"Our purpose in this study," the two physicians say, "was to obtain impartial and intelligent daily records of the effect of various vitamin supplements on apparently normal persons. It was felt that in such a study medical students would be not only cooperative but critical as well. The duration of the experiment was set arbitrarily at thirty days. In our experience, patients having frank deficiencies recover rapidly when specific therapy is instituted. It is reasonable to assume that a subclinical deficiency should respond just as promptly to treatment, and therefore it was felt that nothing would be gained by prolonging the experiment."

"All of the subjects were consuming the usual American diet and apparently were in good health. Before beginning the experiment 20 of them, selected at random, had vitamin studies made, including the determination of carotene, vitamins A and C, nicotine acid, thiamine hydrochloride, riboflavin, pyridoxine, pantothenic acid and prothrombin time. All of these were within normal limits."

In the introduction to their paper, Drs. Ruffin and Cayer explain that "At the present time the use of vitamins is widespread throughout the country, not only in the treatment of disease, but also by apparently normal persons. While no one would question the employment of vitamin therapy in frank deficiency diseases or even in suspected deficiency states, still one wonders if the indiscriminate use of vitamins, sold over the counter to people who have no obvious disease, is justified. It has been argued that such vague

symptoms as weakness, nervousness, fatigability and insomnia can result from a vitamin deficiency and therefore, when such symptoms appear, vitamin therapy should be instituted. Recent surveys, with the recommended daily allowances of the National Research Council as a guide, have indicated that the average American diet often is not adequate to maintain optimal nutrition. This has been used as an additional argument for the administration of vitamins to people without obvious disease on the assumption that they may actually have a 'subclinical deficiency' of which they are not aware. It has been implied that, even when no demonstrable deficiency exists, one's sense of well-being and ability to perform work can be improved greatly by the addition of vitamins to the diet. As pointed out by the Councils on Food and Nutrition and on Industrial Health there is at present no conclusive evidence to substantiate this point of view. . . ."

All of those participating in the study continued their usual activities and ate essentially the same diet. Each subject was given a work sheet to be kept daily and was instructed to record his impression as to the effect of the medication he was taking on the appetite, energy and "pep," general health, "gas" or indigestion, nausea, vomiting, the number of stools per day, abdominal pain and weight. No subject knew what he was receiving or to what group he belonged. At the beginning of the experiment they were told that one group would receive placebos (sugar pills) and the remainder various vitamins. There were 200 subjects selected for the investigation. Reliable data were obtained from 182. The subjects were divided into five groups. Those in group A received 3 vitamin tablets per day and 6 liver extract tablets. Those in group B received 3 vitamin tablets per day and 6 yeast tablets. Those in group C received 3 vitamin tablets per day and 6 placebos per day. Those in group D received 3 vitamin tablets per day and those in group E received 6 placebos per day. The supplements used were of the same size and appearance so that identification was difficult, if not impossible, without chemical analysis.

(Concluded on Page 34)

Editorial

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No. 2

THE MARYLAND PLAN

The Maryland government and medical profession have agreed on a plan to provide medical care for the indigent that, so far as we know at this time, differs in important details from the plans proposed in any other state. We do not have the Bill at hand, but an inkling can be had from the following editorials from the *Baltimore Sun* of January 17th and February 10th:

The Proposed New Medical-Care Program

The long-awaited bill which embodies the administration's plan for State-financed medical service for the indigent has been submitted to the Legislature, accompanied by a message from Governor O'Connor explaining the purpose of the program.

The bill provides for the setting up in the State Health Department of a Bureau of Medical Services with a full-time chief and office force. The bureau would be authorized to employ the services of physicians, nurses and dentists and make provision for hospitalization through agreements with members of the medical profession and the hospitals.

The program (provided it is adopted) will start with the counties and be carried as far as the

wartime shortage of doctors and the initial appropriation will permit. It is understood that the first counties to come under the program will be those where medical services are most badly needed. Eventually the plan would include all the counties and Baltimore city.

The proposal is a recognition of the fact that, in spite of the many and outstanding accomplishments of the nation's medical system, there are weak spots that need to be corrected, and that the most obvious single weakness is in the provision of medical care for that part of the population which cannot afford to pay for it.

The great virtue of the State's plan is that, unlike various Federal proposals, it does not undertake to tear down the tried structure that has been founded upon private practice and erect in its stead a totally new structure under bureaucratic control from Washington. Rather it uses all the good material in the old structure and makes additions to it.

It is especially significant that Governor O'Connor has closely followed the recommendations of the medical profession and that, if the bill is enacted, the system will be administered with professional advice. Another favorable aspect of the plan is its flexibility, enabling it to meet the actual needs, whatever they may prove to be, without going beyond the actual needs.

The bill represents a carefully thought-out attack on a difficult problem, and its essential principles have already attracted attention in other states. Operation of the initial stages of the plan now depends upon the favorable action of the Legislature.

An Important Step Forward In Medical Care

Passage by the Legislature of the State medical aid bill brings nearer the elimination of a serious weakness in the existing medical system. This is the inadequacy of medical care for those who cannot afford to pay for it themselves.

The bill makes provision for payment by the State of doctors and nurses engaged in this service and also for improving the equipment and facilities of county health bureaus. Administration is placed in the hands of a newly created Board of Medical Services in the State Department of Health, and this bureau is also to operate the two chronic disease hospitals, for which provision has been made, and the third which is contemplated. Expenses are covered by an annual appropriation of approximately \$200,000 which is included in the budget.

The bill was framed with the advice and cooperation of the medical profession, and the virtue of the proposal lies in the fact that it endeavors to improve the existing system, which has accomplished so much, rather than to destroy the whole structure and attempt to erect something completely new and untried. The favorable action of the Legislature keeps Maryland in the forefront in the important matter of improving and extending medical care to all who need it.

It may be possible that our next-door neighbor has evolved a plan that we in Delaware should adopt. We shall watch the workings of the Maryland plan with keen interest and report to our Delaware confreres

as things develop. Since the plan sounds reasonable we hope it succeeds.

RE: HOSPITAL CASES

In an effort to encourage the publication of some of the many interesting cases that are found in our Delaware hospitals, we are beginning in this issue a series of short case histories, which we hope will be followed up by the hospitals in the following schedule:

January	Delaware
February	Wilmington General
March	Delaware State
April	Memorial
May	St. Francis
June	Kent General
July	Delaware
August	Wilmington General
September	Milford Memorial
October	Memorial
November	St. Francis
December	Beebe

These short histories may be taken from the staff proceedings of the various hospitals or contributed by staff members from their own hospital records. They should aim to "hit the high spots." Of course, if any member wishes to prepare a more lengthy or formal paper, we shall be glad to receive it, but it will be published on a separate paper.

We call upon the Presidents of the staffs of the hospitals to assume the responsibility of preparing or supervising the preparation of these case reports, and further ask that they be sent to the editor by the fifth day of the month as given in the schedule above. We bespeak your cooperation, and for this—our thanks.

IS IT NECESSARY?

Our hospitals are now so overcrowded that it is becoming increasingly difficult to get beds for some patients who need immediate admission. Every physician, before asking for a bed, should ask himself one vital question: Is it necessary? Surely, no conscientious

practitioner, with things as they are now, would ask for a bed so that some pampered patient may take a "rest cure," and we are confident that our doctors have good reasons for sending certain patients to the hospital. But if the hospitals are to render proper service to their communities their beds should be occupied only with patients who cannot be properly cared for at home. Thus the question: Is it necessary?

Vitamin Supplements of No Value For Normal Persons

(Concluded from Page 32)

The vitamin tablets, which were the usual government issue and furnished by the Office of the Quartermaster General, contained 2,500 U. S. P. units of vitamin A, 200 U. S. P. units of vitamin D, 1 mg. of thiamine hydrochloride, 1.5 mg. of riboflavin, 27.5 mg. of ascorbic acid, and 10 mg. of nicotinamide.

In analyzing the results, it was found that in regard to appetite 6 in group A reported improvement and 31 no change. In group B, 3 reported improvement, 32 no change and 3 a decrease. In group C, 9 reported an improvement, 24 no change and 2 a decrease. In group D, 5 reported an improvement, 28 no change and 2 a decrease. In group E, which received only the placebos, 5 reported an improvement, 29 no change and 1 a decrease. About the same ratio between the various groups was reported in regards to the other classifications.

Identical Twins Are Same Individual in Two Bodies

"Identical twins from the genetic standpoint are the same individual in two bodies," *The Journal of the American Medical Association* for December 2 says, pointing out that this is demonstrated in the unusual military history, published in a recent issue of the *Journal of Heredity*, of the Giles twins both of whom are generals in the Army Air Forces. *The Journal* says:

"If twin pairs entered the Army by mere chance one would expect them to appear once in 16,384 Army Register entries, whereas the actual frequency of their listing is over thirteen times as often. The story of one con-

spicuous pair of army twins establishes again the extent to which identical twins resemble each other. These brothers carry between them five stars and demonstrate in their military history a parallelism which is most unusual. Lieutenant General Barney McK. Giles entered the Army as a private, first class, in the Signal Corps in 1917, was commissioned a second lieutenant in the following year, was honorably discharged in 1920 with the rank of first lieutenant and was reappointed to that rank a few months later. He became a major in 1939, two years later a lieutenant colonel and in the spring of 1942 was advanced to the rank of brigadier general and in the fall of that year to major general. He was promoted to lieutenant general a little later and became chief of staff of the Army Air Forces only a few months later. Major General Benjamin F. Giles entered the Army in 1917 as a second lieutenant of infantry, was honorably discharged in 1919 with the rank of first lieutenant, was recommissioned a second lieutenant in 1920 and became a major in 1930 and a temporary lieutenant colonel in 1939. In 1942 he was advanced to the rank of brigadier general and recently to that of major general. Both officers began their military careers in World War I at age 25, neither went to West Point and they entered the Army at different times but both quickly transferred to aviation and continued in that service. Both were advanced to higher rank from near the bottom of the preceding grade. . . ."

BOOK REVIEWS

Military Medical Manuals—Manual of Clinical Mycology. Prepared under the auspices of the Division of Medical Sciences of the National Research Council by Norman F. Conant, Ph. D., Donald S. Martin, M. D., David T. Smith, M. D., Roger D. Baker, M. D., and Jasper Z. Callaway, M. D. Pp. 348, with 148 illustrations. Cloth. Price, \$3.50. Philadelphia: W. B. Saunders Company, 1944.

This volume is one of a series designed to provide the military medical services with compact standardized texts covering certain fields. Despite the tremendously common

occurrence of fungus diseases, concise and authoritative texts on the subject are practically non-existent. This book, from the staff at Duke University, fills a vacancy most admirably. Each of the authors contribute a section for each chapter. Like the others in this series, the illustrations really contribute something.

The book should appeal to practitioners and not merely to the dermatologists.

Medical Uses of Soap. Edited by Morris Fishbein, M. D. Pp. 182, with 41 illustrations. Cloth. Price, \$3.00. Philadelphia: J. B. Lippincott Company, 1945.

This is all about soap, and not soft soap at that. A symposium by nine M. D.'s or Ph. D.'s, the volume includes an interesting chapter on the technology of soap manufacture. There are chapters on the normal and abnormal effects on normal and abnormal skins, on the hair, and in industry. The concluding chapter deals with the medical uses of soap.

The book may be of interest to physicians, but its future probably depends more upon its appeal to the beauticians and similar artisans.

Modern Sex Manual. By Edward Podolsky, M. D. Pp. 204, with 8 illustrations. Cloth. Price, \$1.98. New York: Cadillac Publishing Company, 1942.

This is the usual run-of-the-mill book on sexual questions, designed for the layman. Written in the question and answer style, the data are accurate enough for lay purposes. In some spots a bit too accurate, in that specific dosages of remedies are given, as though all patients were alike. This is a dangerous procedure, for if the physician uses his medications in a different manner the patient may come to the conclusion his doctor is wrong.

The illustrations do not add to the book; neither does the statement that the author is a member of the American Medical Editors and Authors Association, for the simple reason that that particular association has been defunct for ten years and more. Even in the statement the word "Editors" was omitted.

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Mrs. E. L. STAMBAUGH, President, Lewes
 Mrs. G. C. McELPATRICK, Vice-Pres. for N. C. County, Wilmington
 Mrs. S. W. RENNIE, Recording Secretary, Wilmington
 Mrs. J. C. VICE-PRES. for Kent County
 Mrs. JAMES BEEBE, Vice-Pres. for Sussex County, Lewes
 Mrs. A. J. STRIKOL, Treasurer, Wilmington

NEW CASTLE COUNTY MEDICAL SOCIETY—1945

Meets Third Tuesday

L. B. FLINN, President, Wilmington.
 IRA BURNS, President-elect, Wilmington.
 J. C. PIERSON, Vice-President, Wilmington.

E. R. MILLER, Secretary, Wilmington.
 J. M. MESSICK, Treasurer, Wilmington.

Board of Directors and Nominating
 Committee: L. L. Chipman, 1945; A.
 J. Strikol, 1946; C. C. Neese, 1947.

Delegates: 1945: B. M. Allen, L. W.
 Anderson, T. H. Baker, L. B. Flinn,
 G. W. K. Forrest, C. L. Hudiburg, J. S.
 Keyser, W. W. Lattomus, J. D. Niles,
 C. E. Wagner, 1946: W. E. Bird, Ira
 Burns, G. H. Gehrmann, J. F. Hynes,
 L. J. Jones, E. R. Mayerberg, E. R.
 Miller, C. C. Neese, A. J. Strikol, M. A.
 Tarumianz.

Alternates: 1945: D. D. Burch, D.
 T. Davidson, C. H. Davis, J. R.
 Downes, D. Gay, R. J. Heather, J. W.
 Kerrigan, L. C. McGee, C. E. Maroney,
 L. D. Phillips, 1946: J. W. Butler,
 W. W. Ellis, Mildred Forman, Margaret
 I. Handy, T. V. Hynes, E. M.
 Krieger, J. M. Messick, J. C. Pierson,
 L. J. Rigney, P. R. Smith.

Board of Censors: L. J. Jones,
 1945; L. J. Rigney, 1946; B. M.
 Allen, 1947; N. W. Voss, 1948; C. L.
 Hudiburg, 1949.

Program Committee: Ira Burns L. B.
 Flinn, J. C. Pierson.

Legislative Committee: W. O. La-
 Motte, M. A. Tarumianz, E. H. Len-
 derman, S. W. Rennie, A. D. King.

Public Relations Committee: L. C.
 McGee, W. H. Speer, G. W. K. Forrest,
 E. M. Krieger, R. A. Lynch.

Medical Economics Committee: W.
 E. Bird, D. D. Burch, J. D. Niles,
 W. M. Pierson, L. J. Rigney.

Necrology Committee: J. S. Keyser,
 P. A. Shaw, Mildred Forman.

Auditing Committee: J. W. Kerri-
 gan, A. J. Heather, H. W. Gray.

KENT COUNTY MEDICAL SOCIETY—1945

Meets Second Wednesday

W. C. DEAKYNE, President, Smyrna.
 F. R. EVERETT, Vice-President, Dover.
 H. W. SMITH, Secretary-Treasurer, Har-
 rington.

Delegates: C. J. Prickett, I. J.
 MacCollum, William Marshall, Jr.

Alternates: Stanley Worden, S. M.
 D. Marshall, A. V. Gilliland.

Censors: H. V.P. Wilson, H. W.
 Smith, W. T. Chipman.

DELAWARE ACADEMY OF MEDICINE—1945

Open 10 A. M. to 1 P. M.

Meeting Evenings

W. H. KRAEMER, President.
 E. R. MILLER, First Vice-President.
 J. D. BROWN, Second Vice-President.
 D. T. DAVIDSON, Sr., Secretary.
 J. M. MESSICK, Treasurer.

Board of Directors: C. M. A. Stine,
 J. K. Garrigues, W. S. Carpenter Jr.,
 H. A. Carpenter, F. H. Gawthrop, Mrs.
 Ernest du Pont, H. G. Haskell, S. D.
 Townsend, L. B. Flinn, M. D.

DELAWARE PHARMACEUTICAL SOCIETY—1945

President: C. E. Johnson, Newark.
 First Vice President: L. E. Wilson,
 Georgetown.

Second Vice President: C. A. Hop-
 kins, Dover.

Third Vice President: Thomas
 Davis, Wilmington.

Secretary: Albert Bunin, Wilming-
 ton.

Treasurer: Albert Dougherty, Wil-
 mington.

Board of Directors: C. E. Johnson,
 H. S. Kiger, E. J. Elliott, H. P. Jones,
 V. L. Larson.

MEDICAL COUNCIL OF DELAWARE

Hon. Daniel J. Layton, President;
 Joseph S. McDaniel, M. D., Secretary;
 A. King Lotz, M. D.

SUSSEX COUNTY MEDICAL SOCIETY—1945

Meets Second Thursday—Even Months

H. S. RIGGIN, President, Seaford.
 R. S. LONG, Vice-Pres., Frankford.

A. H. WILLIAMS, Secretary-Treasurer,
 Laurel.

Delegates: H. S. LeCates, A. C.
 Smoot, H. N. Stayton, A. H. Williams.

Alternates: James Beebe, O. V.
 James, H. S. Riggan, J. B. Waples.

Censors: D. L. Bice, R. S. Brick-
 ley, H. S. LeCates.

DELAWARE STATE DENTAL SOCIETY—1945

MORRIS GREENSTEIN, President, Wil-
 mington.

BLAINE ATKINS, First Vice-Pres.,
 Millsboro.

FRANK M. HOOPES, Second Vice-Pres.,
 Wilmington.

RICHARD H. STUCKLEN, Secretary,
 Wilmington.

HENRY S. KEAVENY, Treasurer, Wil-
 mington.

DELAWARE STATE BOARD OF HEALTH—1945

Bruce Barnes, M. D., President,
 Seaford; Mrs. F. G. Tallman, Vice-
 President, Wilmington; Mrs. Caroline
 Hughes, Secretary, Middletown; J. D.
 Niles, M. D., Middletown; W. T. Chip-
 man, M. D., Harrington; W. H. Speer,
 M. D., Wilmington; W. B. Atkins,
 D. D. S., Millsboro; Mrs. C. M. Dillon,
 Wilmington; Edwin Cameron, M. D.,
 Executive Secretary, Dover.

BOARD OF EXAMINERS, MEDICAL SOCIETY OF DELAWARE

J. S. McDaniel, President and Sec-
 retary; Wm. Marshall, Assistant Sec-
 retary; W. E. Bird, W. T. Chipman, P.
 R. Smith.

